BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents *will not* correct images, please do not report the images to the Image Problem Mailbox.

We claim:

1. An electrosurgical device having a proximal end and a distal end, the device comprising:

a handle;

a shaft extending from the handle, the shaft having a distal end;

a fluid passage being connectable to a fluid source;

an electrode tip having an electrode surface, at least a portion of the electrode tip extending distally beyond the distal end of the shaft;

the portion of the electrode tip extending distally beyond the distal end of the shaft comprising a cone shaped portion; and

at least one fluid outlet opening in fluid communication with the fluid passage.

2. The device according to claim 1 wherein:

the at least one fluid out opening is arranged to provide a fluid from the fluid source to the cone shaped portion of the electrode tip.

3. The device according to claim 1 wherein:

at least a portion of the electrode surface forms a contact angle (θ) with a fluid from the fluid source of less than 90 degrees; and

whereby the fluid at least partially wets that portion of the electrode surface.

4. The device according to claim 1 wherein:

the at least one fluid outlet opening is located at the distal end of the shaft.

5. The device according to claim 4 wherein:

the at least one fluid outlet opening located at the distal end of the shaft is located between a portion of the electrode tip contained within the shaft and the distal end of the shaft.

6. The device according to claim 1 wherein:

the at least one fluid outlet opening is sheltered by the device from having direct contact with tissue.

7. The device according to claim 6 wherein:

the at least one fluid outlet opening sheltered by the device from having direct contact with tissue is sheltered by the shaft.

8. The device according to claim 1 further comprising means to shelter the at least one fluid outlet opening from having direct contact with the tissue.

9. The device according to claim 8 wherein:
the means to shelter the at least one fluid outlet opening comprises the shaft.

10. The device according to claim 1 comprising a plurality of fluid outlet openings.

11. The device according to claim 10 wherein:
the plurality of fluid outlet openings are arranged to provide the fluid from the fluid source around the cone shaped portion of the electrode tip.

12. The device according to claim 10 wherein:
the plurality of fluid outlet openings are located at the distal end of the shaft.

13. The device according to claim 7 wherein:
the plurality of fluid outlet openings comprise four equally spaced openings located at the distal end of the shaft.

14. The device according to claim 4 further comprising:
at least one recess provided in the electrode tip, the recess providing a fluid flow channel for a flow of the fluid distally along the electrode tip.

15. The device according to claim 14 comprising a plurality of recesses, each recess providing fluid flow channel for a flow of the fluid distally along the electrode tip.

16. The device according to claim 14 wherein:
the at least one recess is in fluid communication with the at least one fluid outlet opening.

17. The device according to claim 14 wherein:
the number of recesses is equal to the number of fluid outlet openings.

18. An electrosurgical device having a proximal end and a distal end, the device comprising:
a handle;

a shaft extending from the handle, the shaft having a distal end;

a fluid passage being connectable to a fluid source;

an electrode tip having an electrode surface, at least a portion of the electrode tip extending distally beyond the distal end of the shaft;

the portion of the electrode tip extending distally beyond the distal end of the shaft comprising a neck portion and an enlarged end portion, the enlarged end portion located distal to the neck portion and comprising a cone shaped portion; and

at least one fluid outlet opening in fluid communication with the fluid passage.

19. The device according to claim 18, wherein:

the at least one fluid outlet opening is arranged to provide a fluid from the fluid source to the cone shaped portion of the electrode tip.

20. The device according to claim 18 wherein:

at least a portion of the electrode surface forms a contact angle (θ) with a fluid from the fluid source of less than 90 degrees; and

whereby the fluid at least partially wets that portion of the electrode surface.

21. An electrosurgical device having a proximal end and a distal end, the device comprising:

a handle;

a shaft extending from the handle, the shaft having a distal end;

a fluid passage being connectable to a fluid source;

an electrode tip having an electrode surface, at least a portion of the electrode tip extending distally beyond the distal end of the shaft;

the portion of the electrode tip extending distally beyond the distal end of the shaft comprising a neck portion and an enlarged end portion, the enlarged end portion located distal to the neck portion and comprising a cone shaped portion; and

at least one fluid outlet opening in fluid communication with the fluid passage, the fluid outlet opening arranged to provide a fluid from the fluid source to the neck portion of the electrode tip.

22. The device according to claim 21 wherein:

at least a portion of the electrode surface forms a contact angle (θ) with a fluid from the fluid source of less than 90 degrees; and

whereby the fluid at least partially wets that portion of the electrode surface.

23. An electrosurgical device having a proximal end and a distal end, the device comprising:

a handle;

a shaft extending from the handle, the shaft having a distal end;

a fluid passage being connectable to a fluid source;

an electrode tip having an electrode surface, at least a portion of the electrode tip extending distally beyond the distal end of the shaft;

the portion of the electrode tip extending distally beyond the distal end of the shaft comprising a neck portion and an enlarged end portion, the enlarged end portion located distal to the neck portion and comprising a cone shaped portion; and

at least one fluid outlet opening in fluid communication with the fluid passage, the fluid outlet opening arranged to provide a fluid from the fluid source towards the enlarged end portion of the electrode tip.

24. The device according to claim 23 wherein:

at least a portion of the electrode surface forms a contact angle (θ) with a fluid from the fluid source of less than 90 degrees; and

whereby the fluid at least partially wets that portion of the electrode surface.

25. An electrosurgical device comprising:

a handle;

a fluid passage being connectable to a fluid source;

an electrode tip having an electrode surface, and comprising a cone shaped portion; and

at least one fluid outlet opening in fluid communication with the fluid passage, the fluid outlet opening arranged to provide a fluid from the fluid source to the cone shaped portion of the electrode tip.

26. The device according to claim 25 wherein:

at least a portion of the electrode surface forms a contact angle (θ) with a fluid from the fluid source of less than 90 degrees; and

whereby the fluid at least partially wets that portion of the electrode surface.

27. A surgical method for treating tissue comprising:

providing tissue having a tissue surface;

providing radio frequency power at a power level;

providing an electrically conductive fluid at a fluid flow rate;

providing an surgical device configured to simultaneously provide the radio frequency electrical power and the electrically conductive fluid to tissue, the device comprising an electrode tip having an electrode surface, the electrode tip comprising a cone shaped portion and a distal end;

providing the electrically conductive fluid to the tissue at the tissue surface;

forming a fluid coupling comprising the electrically conductive fluid which couples the tissue and the surgical device;

providing the radio frequency power to the tissue at the tissue surface and below the tissue surface into the tissue through the fluid coupling;

coagulating the tissue with the cone shaped portion without cutting the tissue; and

dissecting the tissue with the distal end after coagulating the tissue.

28. An adaptor for electrically coupling between an electrosurgical generator and a bipolar electrosurgical device, the adaptor comprising:

a power input connector for coupling the adaptor with a monopolar mode power output connector of the electrosurgical generator;

a ground connector for coupling the adaptor with a ground connector of the electrosurgical generator;

a first and a second power output connector, each for coupling the adaptor with a first and a second bipolar mode power input connector of the bipolar electrosurgical device, respectively;

a transformer coupled between the power input connector and the first and second power output connectors;

a monopolar hand switch connector for coupling the adaptor with a monopolar mode hand switch connector of the electrosurgical generator; and

at least one bipolar mode hand switch connector for coupling the adaptor with a bipolar mode hand switch connector of the electrosurgical device.

29. The adaptor according to claim 28 wherein:

the transformer comprises a first coil and a second coil;

the first coil adapted to be coupled to a monopolar mode power output of a generator; and

the second coil adapted to be coupled to the bipolar electrosurgical device.

30. The adaptor according to claim 29 wherein:

the first coil comprises a plurality of windings;

the second coil comprises a plurality of windings; and

the number of first coil windings is greater then the number of second coil windings.

31. The adaptor according to claim 28 wherein:
the transformer comprises a first coil and a second coil;
the first coil is coupled at a first end to the power input connector;
the first coil is coupled at a second end to the ground connector;
the second coil is coupled at a first end to the first power output connector; and
the second coil is coupled at a second end to the second power output connector.

32. The adaptor according to claim 28 further comprising:
a first and a second bipolar mode hand switch connector for coupling the adaptor with a first and a second bipolar mode hand switch connector of the electrosurgical device, respectively.

33. The adaptor according to claim 32wherein:
the first bipolar mode hand switch connector is coupled to the monopolar hand switch connector; and
the second bipolar mode hand switch connector is coupled to the power input connector in parallel with the transformer, whereby the coupling bypasses the transformer.

34. A bipolar electrosurgical device comprising:
a first electrode tip and a second electrode tip, the electrode tips coupled to an impedance transformer provided with the electrosurgical device;
at least one fluid delivery passage being connectable to a fluid source;
at least one fluid outlet opening in fluid communication with the at least one fluid delivery passage;
the electrode tips configured to paint along a tissue surface in the presence of fluid from the fluid outlet opening as the tips are moved along the tissue surface; and
whereby the tissue surface can be coagulated without cutting upon the application of radio frequency energy from the electrodes simultaneously with fluid from the fluid outlet opening while the tips are coupled with the fluid adjacent the tissue surface and moved along the tissue surface.

35. The device according to claim 34wherein:

the first electrode tip is provided as part of a first arm;

the second electrode tip is provided as part of a second arm; and

the at least one fluid outlet opening further comprises at least one fluid outlet opening on the first arm and at least one fluid exit on the second arm, each fluid outlet opening in fluid communication with the at least one fluid delivery passage.

36. The device according to claim 35 wherein:

the at least one fluid outlet opening on the first arm is located adjacent the first electrode tip; and

the at least one fluid outlet opening on the second arm is located adjacent the second electrode tip.

37. The device according to claim 35 wherein:

the at least one fluid outlet opening on the first arm is at least partially defined by the first electrode tip; and

the at least one fluid outlet opening on the second arm is at least partially defined by the second electrode tip

38. The device according to claim 35 wherein:

the first arm electrode tip and the at least one first arm fluid outlet opening are configured to couple the first electrode tip to tissue with a fluid coupling comprising fluid from the at least one first arm fluid outlet opening; and

the second arm electrode tip and the at least one second arm fluid outlet opening are configured to couple the second electrode tip to tissue with a fluid coupling comprising fluid from the at least one second arm fluid outlet opening.

39. The device according to claim 34 wherein:

the first electrode tip provides an electrode surface, and at least a portion of the first electrode tip surface forms a contact angle (θ) with a fluid from the fluid source of less than 90 degrees; and

the second electrode tip provides an electrode surface, and at least a portion of the second electrode tip surface forms a contact angle (θ) with a fluid from the fluid source of less than 90 degrees.